



MACH OS 1.1

MACH20001 Gateway Configuration

Release Version 1.0

USER GUIDE

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1.0 Overview

The MACH Gateway Configuration Tool is used to configure both MACH-1 and MACH-2 Gateway products. This User Guide describes how the Tool can be used to configure and set various parameters in the MACH Gateway for optimizing your Industrial Internet-of-Things Network and Application.

1.1 System Requirements

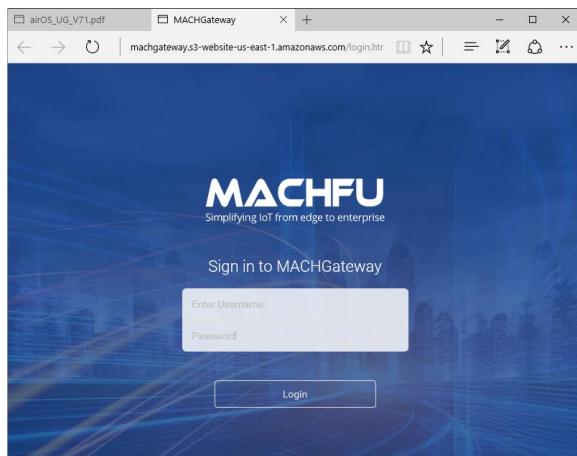
- Microsoft Windows 7, Windows 8;
- Linux; or Mac OS X
- Web Browser:
 - Mozilla Firefox, Apple Safari, Google Chrome, or Microsoft Internet Explorer 11 (or above)

1.2 Logging

To access the MACH Gateway Configuration Interface, perform the following steps:

1. Launch your web browser.
2. Enter `https://10.17.56.114:8443` in the address field.
3. Press Enter (PC) or Return (Mac).

The Login screen appears as below.



Enter the Username and Password fields, and click Login.

1.3 Navigation

The Mach Gateway Configuration Interface contains five main pages, seen in the navigation bar on the left side of the interface. Each web-based management page is used to configure a specific aspect of the Gateway. •

- **(ICON) DASHBOARD** is a synopsis of all the network configuration, and state elements of the Gateway. It displays device information such as name and serial number, and the current state of physical and virtual network interfaces. In addition it displays the GPS information of the device. Page 5 provides details on the **DASHBOARD** configuration page.
- **(ICON) GPS** shows the location of the device, the visible satellites etc. Page 5 provides details on the **GPS** configuration page.
- **(ICON) WIRELESS** configures wireless settings, of the cellular and the Wi-Fi radio Page 7 provides details on the **WIRELESS** configuration page.
- **(ICON) WIRELINE** configures the operating mode of the two Ethernet interfaces; and the Internet Protocol (IP) settings. Page 8 provides details on the **WIRELINE** configuration page.
- **(ICON) NETWORK** configures system management services: Ping Watchdog, Simple Network Management Protocol (SNMP), servers (web, SSH, Telnet), Network Time Protocol (NTP) client, Dynamic Domain Name System (DDNS) client, system log, and device discovery.

Page 9 provides details on the [NETWORK](#) configuration page.

2.0 DASHBOARD

DASHBOARD is a synopsis of all the network configuration, and state elements of the Gateway. It provides a high level view of the device and network interfaces as well as the GPS information.

2.1 General Information

General Info

DEVICE NAME	MACH-1
SERIAL NUMBER	
UPTIME	1 day 03:51:45
LOAD	62.50 %
MEMORY	<div><div>30.73 %</div></div>
DISK/STORAGE	<div><div>68.39 % Used</div></div>

- Device name – Configurable by the User and is set on the 'Settings' page
- Serial number – Filled by the Gateway
- Uptime – Time elapsed since the last boot-up. It is shown in days, hours, minutes and seconds.
- Load – CPU usage
- Memory – Memory currently used.
- Disk/Storage – Storage available for Applications

2.2 GPS

GPS

LOCATION
GPS TIME
GPS SATELLITES
GPS FIX TIME

- Location – Latitude/Longitude/Altitude of Device

- System Time – UTC time as received by GPS
- Satellites in View – Number of GPS satellites in view of the device
- GPS Fix Time – Last fix from the GPS satellites

2.3 Cellular Info


Cell

PPP UP/DOWN	▼
IP ADDRESS	
GATEWAY	
NETMASK	
BYTES TRANSMITTED - TX	
BYTES RECEIVED - RX	

- PPP UP/DOWN – Indicates if the Cellular link is UP or DOWN
- IP Address – IP address of the PPP link
- Gateway – The IP address of the PPP Gateway Router
- Bytes Tx– Number of bytes transmitted since boot-up
- Bytes Rx – Number of bytes received since boot-up


2.4 Wi-Fi

WiFi 0

SSID	
MODE	
LINK UP/DOWN	
LINK SPEED	
MAC ADDRESS	F4:B8:5E:49:A4:96
IP ADDRESS	10.56.17.158
GATEWAY	
NETMASK	
BYTES TRANSMITTED - TX	86457930
BYTES RECEIVED - RX	38736794

- SSID – Specifies the wireless network name or SSID (Service Set Identifier) used to identify the WLAN
- Mode – Defines whether it is an Access Point (AP) or a Station
- Link UP/DOWN – Indicates if the Wi-Fi link is UP or DOWN
- Link Speed – Data rate on the Wi-Fi link
- MAC Address – MAC address of the Wi-Fi link
- IP Address – The IP address of the Wi-Fi link
- IP Gateway – This will have the same address as the IP Address field in the AP mode. In the Station mode, this is the address assigned by the Wi-Fi access point

Ethernet 0

LINK UP/DOWN	
LINK SPEED	
MAC ADDRESS	36:E1:C7:D4:EC:FF
IP ADDRESS	
GATEWAY	
NETMASK	
BYTES TRANSMITTED - TX	0
BYTES RECEIVED - RX	0

- Link UP/DOWN – Indicates if the Ethernet link is UP or DOWN
- Link Speed – Data rate on the Ethernet Interface
- MAC Address – MAC address of the Ethernet link
- IP Address – IP address of the Ethernet link
- Gateway – MAC address of the Wi-Fi link
- Netmask – Subnet definition
- Bytes Tx - Number of bytes transmitted since boot-up
- Bytes Rx - Number of bytes received since boot-up

2.5 Ethernet

3.0 WIRELESS INTERFACES

The wireless interface configurations are used to configure the Wi-Fi and Bluetooth radios on the MACH Gateway.

3.1 Wi-Fi AP

In the Access Point mode the following configuration panel is seen.

- Set the 'Enable' button to use the Wi-Fi in the access point mode
- SSID – Specify the wireless network name or SSID (Service Set Identifier) used to identify the WLAN
- Set the 'Hide SSID' button if you want the SSID to be invisible
- Choose the authentication mechanism. The choices from the drop down menu are WPA2 or PSK
- Enter the password
- Enter IP address
- Enter Netmask value
- Set the 'Enable' button on the DHCP is the IP address is assigned dynamically
- Enter the DHCP range of values.

4.0 WIRELINE INTERFACES

The two Ethernet ports have identical configuration elements. The help guide applies to both ports.

You have the option of enabling or disabling an Ethernet interface even if the interface is physically connected. To Enable, set Enable Ethernet 0/1 to 'ON' and to disable set it to 'OFF'.

Ethernet 0

ENABLE ETHERNET 0 ☐

SELECT MODE **STATIC IP** DHCP BRIDGE

IP ADDRESS

GATEWAY

NETMASK

VLAN TAG

5.1 IP Addressing

If the Gateway has a static IP address, select 'STATIC IP' and enter the address in the Gateway address dialog box. If the Gateway is assigned dynamic addresses, then select DHCP and the Gateway address dialog box will be automatically filled.

5.2 NETMASK Address

Fill in the NETMASK address in the NETMASK address dialog box. If the Gateway is assigned dynamic addresses, then the NETMASK address dialog box will be automatically filled.

5.3 VLAN Tag

Enter VLAN tag value if the packets are destined for a desired location through the use of TAG values

5.4 BRIDGE

Bridge is a logical device used to connect different physical or virtual network interfaces (bridge ports). If the Ethernet interface is used to bridge data coming over the interface to other communication means such as Wi-Fi etc., select the 'BRIDGE' in the MODE dialog box. There is no IP address associated in this mode of operation.

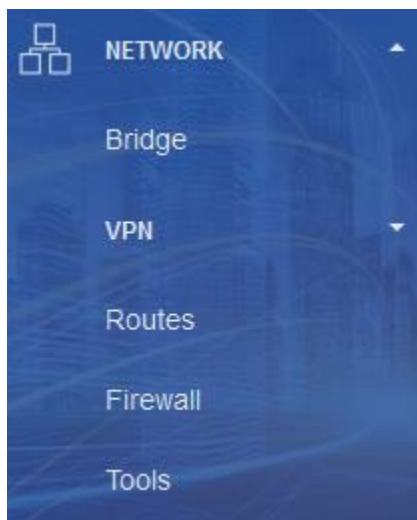
5.5 Testing

Network testing can be performed to test connectivity. Enter an IP address to PING test for network connectivity.

5.0 NETWORK

The MACH Gateway has multiple network interfaces and a number of different ways of configuring these interfaces. The configurations include upstream WAN side as well as the downstream LAN side. They include advanced functionalities such as VPN, Firewalls, provisioning IP addresses etc.

When you click on the NETWORK Tab on the left panel, the following user interface shows up:



Click on the item you wish to configure.

5.1 Bridge

In the bridge mode any broadcast that comes on the Wi-Fi, Ethernet 0 or Ethernet 1 ports are automatically sent over through the other 2 ports. Unicast messages for the MACH Gateway are sent only to the MACH unit.

- Wi-Fi
- Ethernet 0
- Ethernet 1

VLAN Tag (Optional) - Enter VLAN tag value if the packets are destined for a desired location through the use of TAG values

5.2 VPN

When VPN is select one of the following options.



5.2.1 L2TP

When you need to configure the Layer 2 tunneling protocol, click on L2TP.

The L2TP protocol implemented is L2TPv3 in unmanaged mode, configured to transport 'Ethernet Pseudowire'. IETF RFC 3931 defines L2TPv3.

<https://tools.ietf.org/html/rfc3931>

The dialog boxes have the following inputs:

- Enter the public IP address of the IPSEC server
- Choose if IPSEC goes over a cellular or Wi-Fi connection
- Enter the private IP address for the MACH Gateway
- Enter the private IP address of the IPSEC server (PEER)
- Type the port number of the local port (MACH). The number can also be incremented and decremented by 1.

- Type the port number of the peer port. The number can also be incremented and decremented by 1.
- Type the local tunnel ID (MACH). The number can also be incremented and decremented by 1.
- Types the peer tunnel ID. The number can also be incremented and decremented by 1.
- Type the local session ID (MACH). The number can also be incremented and decremented by 1.
- Types the peer session ID. The number can also be incremented and decremented by 1.
- Paste the CA certificate in PEM format
- Paste the DEV certificate in PEM format
- Paste the DEV private key in PEM format

5.2.2 Open VPN

Click on the 'Enable' button if you want to operate in the Open VPN mode.

- Enter the IP address of the Remote
- Enter Remote Port
- Paste the certificate in PEM format
- Paste the TA key in PEM format

6.0 REGULATORY NOTICES

FCC Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

FCC Radiation Exposure Statement

This device complies with FCC radiation exposure limits set forth for an uncontrolled environment and it also complies with Part 15 of the FCC RF Rules. This equipment must be installed and operated in accordance with provided instructions and the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter. End-users and installers must be provided with antenna installation instructions and consider removing the no-collocation statement.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Caution !

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.